

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
7 October 2004 (07.10.2004)

PCT

(10) International Publication Number
WO 2004/085948 A1

(51) International Patent Classification⁷: F28F 3/02 (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(21) International Application Number: PCT/JP2004/003804

(22) International Filing Date: 19 March 2004 (19.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Date: 2003-086282 26 March 2003 (26.03.2003) JP

(71) Applicant (for all designated States except US): CALSONIC KANSEI CORP. [JP/JP]; 5-24-15 Minamidai, Nakano-ku, Tokyo, 164-8602 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): MORISHITA, Masashi [JP/JP]; Calsonic Kansei Corp., 5-24-15 Minamidai, Nakano-ku, Tokyo 164-8602 (JP). ONUKI, Hisashi [JP/JP]; Calsonic Kansei Corp., 5-24-15 Minamidai, Nakano-ku, Tokyo 164-8602 (JP). KAWAI, Yoshihiro [JP/JP]; Calsonic Kansei Corp., 5-24-15 Minamidai, Nakano-ku, Tokyo 164-8602 (JP).

(74) Agent: AYATA, Masamichi; 203 Royal-Chateau Kawasaki, Omiya-cho 22-2, Saiwai-ku, Kawasaki-shi, Kanagawa-ken 212-0014 (JP).

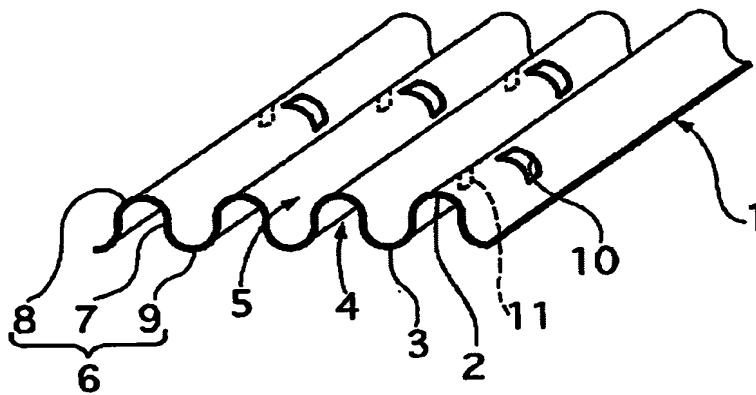
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: INNER FIN WITH CUTOUT WINDOW FOR HEAT EXCHANGER



WO 2004/085948 A1

stirring of the heat exchange medium, thereby enhancing heat exchange efficiency.

(57) **Abstract:** An inner fin (1) of a heat exchanger has, on front and rear faces thereof, protruding ridges (2, 3) protruding in opposite directions to each other. Grooves (4, 5) to serve as passages of a heat exchange medium are formed between the adjacent protruding ridges (2, 3). In wall portions (6) forming these protruding ridges (2, 3), cutout windows (10, 11) are formed to allow the adjacent passages to communicate with each other. Further, protruding weir portions (12, 13) are provided at bottoms of entrances of the cutout windows (10 and 11), so that the heat exchange medium hits against the weir portions to promote diffusione and